## SI Guide

In the Supplementary Information file are legends to Supplementary Tables 1 and 2, eight supplementary figures, and the two supplementary tables. The supplementary figures and tables are as follows:

Supplementary Fig. 1: PU.1 expression in a range of populations of primary cells.

Supplementary Fig. 2: IRF8 preferentially binds DNA via classical IRF motifs.

Supplementary Fig. 3: Identification of closest IRF4 motifs to AP-1 motifs.

Supplementary Fig. 4: Motif analysis for BATF.

Supplementary Fig. 5: Colocalization of ChIP-Seq peaks for IRF4 and BATF with STAT3 and JUN family proteins.

Supplementary Fig. 6: Absence of supershifting when nuclear extracts were omitted.

Supplementary Fig. 7: EMSA from B, Th2, and Th9 cells.

Supplementary Fig. 8: Coprecipitation of BATF and Jun but not of BATF and IRF4 in Th17 cells.

Supplementary Table 1: List of discovered AP-1/IRF4 composite motifs from top 1000 IRF4 peaks in CD4+ T cells.

Supplementary Table 2: Summary of all ChIP-Seq and RNA-Seq libraries.